

HAPTIC FEEDBACK GENERATION

RELATED APPLICATION

[0001] The present international patent cooperative treaty (PCT) application claims the benefit of priority to Chinese Patent Application No. 201410209726.6, filed on May 16, 2014, and entitled “Identification Method and System”, which is hereby incorporated into the present international PCT application by reference herein in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the field of haptic feedback technologies, and in particular, to a haptic feedback generation method and apparatus.

BACKGROUND

[0003] Haptic feedback is a technology in which an apparatus gives a haptic feedback to a user operation. For example, when a user clicks a corresponding menu on a smart phone or a tablet computer, the apparatus may vibrate under drive of a built-in motor, to cause that the user may know that the apparatus has received an operation instruction. Haptic feedback is widely applied when a user drives a car or when observation is inconvenient for a user.

[0004] In an existing haptic feedback technology, a built-in motor drives vibration of the entire apparatus, which causes large energy consumption and affects user experience.

SUMMARY

[0005] An example, non-limiting objective of the present application is to provide a haptic feedback generation method and apparatus.

[0006] According to an example aspect of at least one embodiment of the present application, a haptic feedback generation method is provided, and comprises:

[0007] in response to that a user body touches an object, sending a second mechanical wave that is used to form a haptic signal at a touch position of the object with a first mechanical wave generated by the user body.

[0008] According to another example aspect of at least one embodiment of the present application, a haptic feedback generation method is provided, and comprises:

[0009] in response to that a user body touches an object, sending, to the object through a medium, a second mechanical wave that is used to form a haptic signal at a touch position of the object with a first mechanical wave generated by the object, wherein the medium comprises at least one part of the user body.

[0010] According to another example aspect of at least one embodiment of the present application, a haptic feedback generation apparatus is provided, and comprises:

[0011] a sending module, configured to: in response to that a user body touches an object, send a second mechanical wave that is used to form a haptic signal at a touch position of the object with a first mechanical wave generated by the user body.

[0012] According to another example aspect of at least one embodiment of the present application, a haptic feedback generation apparatus is provided, and comprises:

[0013] a sending module, configured to: in response to that a user body touches an object, send, to the object through a medium, a second mechanical wave that is

used to form a haptic signal at a touch position of the object with a first mechanical wave generated by the object.

[0014] In the methods and apparatuses of the embodiments of the present application, a source for forming a haptic signal is at a touch position, to cause that an effective haptic feedback to a user can be formed with little energy consumption, and poor experience of the user caused by vibration of an entire object is avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The disclosure will become more fully understood from the detailed description given herein below for illustration only, and thus are not limitative of the disclosure, and wherein:

[0016] FIG. 1a is a flowchart of a haptic feedback generation method according to an example embodiment of the present application;

[0017] FIG. 1b is an example waveform diagram of a mechanical wave obtained through superposition when an amplitude of a first mechanical wave is the same as an amplitude of a second mechanical wave;

[0018] FIG. 1c is an example waveform diagram of a mechanical wave obtained through superposition when a ratio of an amplitude of a first mechanical wave to an amplitude of a second mechanical wave is 1:2;

[0019] FIG. 1d is an example waveform diagram of a mechanical wave obtained through superposition when a ratio of an amplitude of a first mechanical wave to an amplitude of a second mechanical wave is 1:10;

[0020] FIG. 2 is a detailed flowchart of step S110 in an example embodiment of the present application;

[0021] FIG. 3 is a flowchart of a method in an example embodiment of the present application;

[0022] FIG. 4 is a detailed flowchart of step S110 in another example embodiment of the present application;

[0023] FIG. 5 is a flowchart of a haptic feedback generation method according to another example embodiment of the present application;

[0024] FIG. 6 is a detailed flowchart of step S510 in an example embodiment of the present application;

[0025] FIG. 7 is a flowchart of a method in an example embodiment of the present application;

[0026] FIG. 8 is a detailed flowchart of step S510 in another example embodiment of the present application;

[0027] FIG. 9 is a schematic structural diagram of a module of a haptic feedback generation apparatus according to an example embodiment of the present application;

[0028] FIG. 10 is a schematic structural diagram of modules of a haptic feedback generation apparatus in an example embodiment of the present application;

[0029] FIG. 11 is a schematic structural diagram of modules of a haptic feedback generation apparatus in another example embodiment of the present application;

[0030] FIG. 12 is a schematic structural diagram of modules of a haptic feedback generation apparatus in another example embodiment of the present application;

[0031] FIG. 13 is a schematic structural diagram of a module of a haptic feedback generation apparatus according to example embodiment of the present application;

[0032] FIG. 14 is a schematic structural diagram of modules of a haptic feedback generation apparatus in an example embodiment of the present application;